ENGINEERING
LIBRARY

APR 8 " 1947

PRODUCT ENGINEERING

PUBLISHED MONTHLY

INDEX TO VOLUME XVII

JANUARY TO DECEMBER, 1946

This index covering the 12 monthly numbers of PRODUCT ENGINEERING for 1946 is presented in three sections:

1. An alphabetical index arranged according to the chief subject matter and cross-indexed to facilitate locating the item sought.

2. A classified index with articles appearing under 17 appropriate headings.

3. An authors' index listing the names of the writers and the subjects they have presented in the 12-month period.

Page references to editorials are listed in a separate box.

★

McGRAW-HILL PUBLISHING COMPANY, INC. · 330 WEST 42nd STREET, NEW YORK 18, N.Y.

Engin. Lib.

ALPHABETICAL INDEX

— A —

Abrasive sticks in plastic wedges facilitate automatic bore sizing ....Sept. 100
Accumulator, hydraulic .....Jan. 17
Adaptable machine tools (abstract).Mar. 241
Adhesives for wood, thermosetting..July 84
Adjustable-pitch engine fan .....Feb. 108
Adjustable-voltage control—basic principles and circuits ..... July 142
A.G.M.A. standard materials—Cast iron gear blanks .....Dec. 155, 157
Air compressor, german.....Feb. 107
Aircraft, alternating current power for large ..... June 503
Aircraft brakes, new approach in designing high capacity .....Nov. 140
Aircraft construction principles used in aluminum and magnesium house trailer ..... Mar. 196
Aircraft electrical systems, design problems and solutions .....Aug. 122
Aircraft engine, 2,500 hp. V-type...Feb. 162
Aircraft engine, most powerful.....Feb. 148
Aircraft machine gun fires 50 percent faster ..... Feb. 151
Aircraft materials research.....Feb. 146
Aircraft power plant, "Propjet"....Jan. 76
Aircraft propeller,controllable pitch..Apr. 280
Aircraft propeller, variable pitch..July 100
Aircraft service, motor ventilation requirements for .....May 377
Air engineering development center.Oct. 132
Air injector threads german spinning machine ..... Dec. 95
Airplane surface contours (abstract).Feb. 127
Allowable working stresses for steels. Mar. 205
Allyl resins ..... Apr. 299
Alternating current power for large aircraft .....June 503
Altimeter increases air safety automatic .....Dec. 146
Aluminum alloy parts, sand cast and permanent-mold cast .....Oct. 81
Aluminum and magnesium house trailer .....Mar. 196
Aluminum and magnesium in hoisting equipment (abstract) .....Sept. 116
Aluminum bearings (abstract).....Feb. 128
Aluminum 75ST alcad, effects of corrosion on spot welded .....Oct. 126
Aluminum 75ST alcad, spot weld strengths and structures .....Sept. 102
Aluminum cycle .....Nov. 100
Aluminum, finishes for .....Nov. 113
Analysis of pressure losses in lubricant and fuel pumps .....Nov. 126
Analysis of servomechanisms for instruments and power drives .....Apr. 332
Applied finishes for zinc alloy die castings ..... May 389
Applied finishes standardization and basic principles of procedure...Jan. 24
Are patents being suppressed?
(abstract) .....Feb. 127
comment ..... May 422
comment ..... June 502
comment ..... July 141
comment ..... Sept. 148
comment ..... Oct. 141
A.S.M.E. design division launched..Jan. 74
A.S.M.E. machine design group.....Aug. 79
Atmospheric attack on copper alloys (abstract) .....Nov. 134
Atoms ..... Aug. 146
Attachments driven by flexible shaft in compact manicuring device ....June 459
Automatic beverage inspection machine ..... May 362
Automatic controlling mechanisms for valve operation. .....pt. I June 482
pt. II July 128
Automatic nozzle for garden hose...Dec. 97
Automatic press holds gears and prevents distortion during quenching ..... Sept. 94
Automobile designed for light alloy construction ..... Dec. 88
Automobile finish ..... Sept. 147
Automotive heater, self-contained..Aug. 98
Automotive steering mechanism...Apr. 285
Avoid expensive materials specifications .....Feb. 101
Axial flow compressor reduces jet engine diameter ..... Aug. 90

— B —

Ball-bearing nuts, design of groove-form screws with ..... June 471
Ball bearing strength (abstract)..Aug. 117
Ball bearing test unit measures small changes in torque .....Oct. 129
Bar controller regulates automatic press-molding cycle .....Dec. 96
Basic control circuits for squirrel cage motors .....June 444
Basic principles and circuits, adjustable voltage control .....July 142
Battery charger, portable ..... Nov. 101
Battery, seawater ..... Nov. 156
Bearing design and installation in high-speed superchargers .....Jan. 8
Bearing design, charts for fluid friction .....pt. I Apr. 351
pt. II May 435

EDITORIALS

The cross roads we are facing Jan. 23
Avoid expensive materials specifications .....Feb. 101
The mind to work is the root of progress .....Mar. 199
Poor recognition breeds frustration .....Apr. 287
Design calculations are not by rule and rote.....May 373
Standards cannot stagnate progress .....June 463
Scrap piles cost money.....July 79
A.S.M.E. machine design group Aug. 79
Easy maintenance for repeat sales .....Sept. 79
New motor standards benefit industry .....Oct. 79
The values of business contracts Nov. 79
Meeting the shortage of engines .....Dec. 79

Bearings, aluminum (abstract) ....Feb. 128
Bearings, Durex-100 engine.....Apr. 335
Bearings, loading capacity of porous (abstract) .....Jan. 52
Bearings, narrow sleeve (abstract).Aug. 113
Bellows expansion changes leverage.Sept. 99
Beverage inspection machine, automatic ..... May 362
Bimetallic double-wall tubing for combating corrosion .....Feb. 102
Blast cleaning device .....Feb. 114
Brake classifications, friction .....Mar. 182
Brake linings (abstract) .....Jan. 50
Brake linings, friction .....Jan. 39
Brake system, hydraulic .....Mar. 191
Brakes, a new approach in designing high capacity aircraft .....Nov. 140
Brakes, methods of actuating electric, magnetic and vacuum .....Jan. 48
Brakes, methods of actuating pneumatic, magnetic and hydraulic .....Feb. 132
Braking systems, requirements and design of automotive .....May 384
Brazed parts, copper furnace .....Oct. 103
British industry and research (abstract) .....July 119
Brittle coating method for experimental stress analysis .....Dec. 122
Brittle coating testing, connecting rod design improved through.....Dec. 128
Brush hypersonic analyzer.....Mar. 198
Bullard Man-Au-Trol lathe .....Mar. 192

— C —

Calculations of geometrical dimensions on drawn parts .....Mar. 263
Calibration ring with two axes of symmetry ..... Feb. 115
Cam design, velocity and acceleration in ..... Mar. 246
Camera and viewer, stereoscopic ...Nov. 101
Camera for atom bomb test .....Apr. 318
Camera has self-contained light source ..... Feb. 100
Camera, television .....Jan. 15
Capillary seals of hydraulic valves and pumps, leakage in .....Apr. 290
Carbide dies receiving wider use...Oct. 138
Carbon and alloy steel materials for cold-formed springs .....Oct. 119
corrections .....Dec. 152
Carbon and alloy steel materials for hot-formed springs ..... Nov. 86
Case histories in patent law:
No. 1 May 400, No. 2 June 470, Nos. 3-4 Aug. 129, No. 5 Oct. 152, No. 6 Nov. 104
Cast iron gear blanks, A.G.M.A. standard materials .....Dec. 155, 157
Castings, magnesium .....Apr. 340
Cathode-ray tubes (abstract).....Nov. 139
Cellulose propionate .....Apr. 302
Ceramic materials in gas turbine (abstract) .....Nov. 135
Chain saw uses magnesium castings. June 452
Changes in load current record performance .....Dec. 94
Chart for determining the properties of copper wire in the American wire gage .....Aug. 161
Chart for efficiencies of worm drives Oct. 155, 157
Chart for solution of oblique angle triangles ..... Nov. 161
Chart for solution of right triangles. Nov. 163
Charts for fluid friction bearing design .....pt. I Apr. 351
pt. II May 435
Circular calibration ring with two axes of symmetry .....Feb. 115
Clamping devices for accurately aligning adjustable parts .....Mar. 216
Clerical and semi-technical services in engineering department management ..... Aug. 102
Clutch and speed control, hydraulic.Jan. 22
Clutches, woven and molded friction materials for disk-type .....Apr. 273
Coatings, plastic resins as protective ..... Jan. 1
Cold-forged inserts (abstract) ....Sept. 116
Color—basic principles of application ..... Feb. 89
Color sorting by electronic inspection ..... Oct. 90
Combating noise in mechanisms (abstract) .....July 121
Compact fuel oil pumping unit ....Feb. 110
Compound adjustments made to linkage output with movable fulcrums.Sept. 92
Compressor with split connecting rods and bearings .....Nov. 98
Concrete mixer has chain drive on drum .....Dec. 98
Connecting rod design improved through brittle coating testing.....Der. 128
Constant speed regulation—four systems for maintaining preset speed ..... Oct. 100
Constant tension control systems for surface and mandrel winding .....Dec. 117
Continuous slide film projector has electrical timing device .....Sept. 98
Control of engineering projects ....Mar. 177
Control transformers (abstract)....July 119
Controllable pitch aircraft propeller ..... Apr. 280
Copper furnace brazed parts and principles of design .....Oct. 103
Copper oxide and silicon carbide varistors ..... Nov. 121
Corrugated low-density structures, physical properties of .....May 394
Coupling rotating shafts.....pt. I Nov. 124
pt. II Dec. 112
Coupling uses O-ring packings, flexible fluid .....Jan. 19
Crosley car .....Mar. 188
Cross roads we are facing .....Jan. 23
360 cycle motors for compact design of portable tools .....Nov. 110

— D —

Deep-tiling plow has two bases....July 103
De-refining before and after (abstract) .....Mar. 240
Design analysis of rotary pumps to obtain maximum efficiency.....Feb. 138
Design and sealing problems for underwater operation of a vehicle....June 474
Design calculations are not by rule and rote ..... May 373
Design of groove-form screws with ball-bearing nuts ..... June 471
Design of magnesium castings for high properties and soundness .....Apr. 340
Design of parts to be formed by metal spinning ..... Aug. 150
Design of welded parts .....July 122
Design of weldments for best results at lowest costs .....Aug. 86
Design, production and research (abstract) .....Sept. 119
Design standards for inserts.....Jan. 29
Design tolerances for transparent acrylic plastics .....July 110
Development projects, planning and scheduling system for .....Nov. 114
Dictating machine drive .....Nov. 90
Die castings, finishes for zinc alloy..May 389
Die castings, german, made by hot shot gooseneck method .....July 81
Die castings used in pepper mill, zinc-alloy ..... Apr. 281
Diesel engine crankshaft grinder uses two motors to drive crankshaft.June 456
Displacement correction factors for rotary spur gear pumps.....June 440
Domestic heating unit .....Nov. 97
Drawing board, motor driven .....Aug. 153
Drawing changes, handling .....Mar. 226
Drawings for machining and casting uses, dual dimensioning of .....May 398
Drawings for Rolls Royce Merlin engine, why Packard made new.....Nov. 81
Driving-type dynamometer .....Feb. 120
Dual dimensioning of drawings for machining and casting uses .....May 398
Ductile permanent magnets offer new design possibilities .....Jan. 44
Durex-100 engine bearings—material characteristics and design data.Apr. 335
Dynamometer of the driving-type for small running torque measurements ..... Feb. 120

— E —

E-type test piece (abstract).....Sept. 120
Easy maintenance for repeat sales..Sept. 79
Eccentric position controls full range of pump output .....Oct. 94
Economical tolerances determine materials and manufacturing processes May 374
Effect of voltage variations(abstract).Mar. 239

Effects of corrosion on spot welded 75ST alclad alloy ..... Oct. 126
Efficiency of plates in riveted tension joints ..... Sept. 88
Egg crate nailing machine ..... Feb. 113
Electric citrus fruit counter design. May 366
Electric fuel pump ..... Nov. 99
Electric hot plate ..... May 367
Electric lawn mower ..... Nov. 102
Electric limit switches ..... Sept. 132
Electrical measurements, standardization of temperature and ..... Mar. 212
Electronic control, motor speed adjustment by ..... May 353
Electronic marine navigator first commercial radar product ..... Jan. 69
Electronic numerical integrator and computer ..... May 412
Electronic probe controls liquid levels ..... Oct. 93
Electronic warfare: radar countermeasures ..... Jan. 72
Electronic wheel balancer ..... Sept. 126
Electropolishing metals to obtain surface finish ..... June 449
Engine fan, adjustable pitch ..... Feb. 108
Engineering department management, clerical and semi-technical services in ..... Aug. 102
Engineering educators include research functions ..... Sept. 145
Engineering management fundamentals adapted to the small company.. Oct. 110
Engineering problems in bus body design reduced by plaster mock-ups.... June 437
Engineering properties of sintered metals ..... Apr. 268
Engineering properties of sintered versus cast metals ..... Feb. 122
Engineering standards, international unification of ..... Apr. 324
comment ..... Sept. 148
Extrusion principle applied to the injection molding of rubber ..... Oct. 96
Extrusion, properties and limitations for stepped and tapered ..... June 487

— F —

Fatigue strength of steel forgings.. Sept. 130
Fatigue strength, shot peening and (abstract) ..... Apr. 321
Felt seals, plain and laminated.... Mar. 209
Felt wick lubricating systems for bearings and machine parts..... June 509
Fine pitch gears IV—inspection and tolerances ..... Aug. 130
correction ..... Oct. 141
Finishes for aluminum ..... Nov. 113
Finishes for zinc alloy die castings. May. 389
Finishes standardization and basic principles of procedure, applied.... Jan. 24
First two-stage turbo supercharger. Apr. 330
Flexible couplings (abstract)..... Jan. 52
Flexible fluid coupling uses O-ring packings ..... Jan. 19
Flow of liquids in pipe systems, resistance coefficients and ..... May 406
Foreign patent protection for American industry ..... July 148
Foreign reports...Sept. 143, Oct. 137, Nov. 159, Dec. 151
Formulas for determining the properties of copper wire in the American wire gage ..... Aug. 159
correction ..... Nov. 158
Four methods for the solution of simultaneous linear equations ..... June 513
Fractional horsepower motor ratings in terms of breakdown torque .... Nov. 103
Freezer, home ..... Dec. 101
French locomotive (abstract) ..... Jan. 51
Friction brake classifications and analysis of their design..... Mar. 182
Friction brake linings..... Jan. 39
Friction materials for disk-type clutches, woven and molded ..... Apr 273
Friction welding of plastics (abstract) ..... May 405
Fuel oil pumping unit ..... Feb. 110
Fundamentals of servomechanisms, how to select and apply them ..... June 464

— G —

Gage measures material thickness with air pressure ..... June 454
Gas kitchen range ..... Nov. 102
Gas range burner ..... Mar. 195
Gas turbine, jet propulsion ..... Feb. 111
Gas turbine operates at 1,500 degrees F., stationary ..... May 415
Gas turbine plane gear ..... June 486
Gasoline engine, lightweight..... Dec 101
Gear durability in speed reducers, practical considerations that affect.. May 358
Gears, fine pitch IV—inspection and tolerances ..... Aug. 130
correction ..... Oct. 141
Gear teeth, evaluating surface roughness of ..... Sept. 110
Gears, testing the tooth durability of (abstract) ..... Dec. 138
German die castings made by hot shot gooseneck method ..... July 81
German plastics industry, 1939-1945. Mar. 218
Germicidal lamp has plastic end fitting ..... June 461
1946 Gibson refrigerator..... June 460
Glass, coated, eliminates icing .... Nov. 153
Glass-cloth laminates, melamine.... Feb. 142
Glass fiber laminates, strength of (abstrart) ..... July 117
Glass fishing rod ..... Nov. 100
Graphical method for analyzing hydraulic pump and motor data.. Mar. 230
Gray Audograph ..... Nov. 90
Greases, characteristics and uses (abstract) ..... Feb. 130
Grinding machine is hydraulically operated ..... Aug. 96
Groove-form screws with ball-bearing nuts ..... June 471

— H —

Handling drawing changes to assure promptness and accuracy ..... Mar. 226
Hard-facing materials to improve product performance ..... Feb. 134
Hard soldering of steel (abstract). Aug. 115
Heat and corrosion resistant high temperature alloys.... Sept. 151, 153, 155, 157
Heater, self-contained automotive.. Aug. 98
Heating unit, domestic ..... Nov. 97
High nickel alloy irons ..... Feb. 92
High-pressure locomotive lubricator uses magnesium castings ..... July 104
High-presure pump of compact design is of variable volume radial type.. May 370
High temperature alloys, heat and corrosion resistant... Sept. 151, 153, 155, 157
High-temperature alloys, precision-cast parts of ..... Sept. 121
High-temperature materials (abstract) ..... Dec. 137
Home service unit ..... Feb. 109
Household sprayer ..... Oct. 92
House trailer made of aluminum and magnesium ..... Mar. 196
How to apply sub-fractional horsepower motors ..... Mar. 250
How transfer molding affects plastics parts design ..... Nov. 129
How to disclose your invention for maximum legal protection..... May 428
comment ..... Oct. 141
Huff-Duff high-frequency radio direction finder ..... Apr. 328
Hydraulic accumulator ..... Jan. 17
Hydraulic automotive steering mechanism ..... Apr. 285
Hydraulic brake system ..... Mar. 191
Hydraulic clutch and speed control. Jan. 22
Hydraulic lift control quadrant made of stamped parts ..... July 105
Hydraulic power boost ..... Nov. 96
Hydraulic pump and motor data, graphical method for analyzing.... Mar. 230
Hydraulic systems, selection of operating pressure ..... Feb. 163
Hydraulic systems, valves, piping and design data for control of..... Oct. 86
Hypersonic analyzer, Brush..... Mar. 198

— I —

Impact strength increased by removing material ..... Dec. 131
Impact stress in elastic bodies calculated by the energy method ..... Mar. 200
Impact-test data, significance in design ..... Sept. 81
Induction motor output depends on total active material ..... Dec. 114
Indusrial drive problems, specially designed motors solve many..... Sept. 84
Infra-red electron telescope ..... Aug. 147
Injection carburetor for light aircraft ..... May 368
Injection molding of rubber..... Oct. 96
Inserts for molded plastic parts.... Jan. 29
Instruments often help machines work at peak efficiency ..... Aug. 118
Insulation varnish applied by rolling armatures through tank ..... Sept. 96
Intercommunication unit ..... Dec. 100
International standards organizations hold Paris meetings ..... Aug. 144
Invention for maximum legal protection, how to disclose your ..... May 428
comment ..... Oct. 141
Inventions into marketable products, translating ..... June 484
Involute splines (abstract)..... Sept. 120
Iron, side-rest ..... Nov. 101
Isolation of vibration in spring mounted apparatus ..... pt. I July 106
pt. II Aug. 154
Referenre book sheets.. July 159, 161, 163

— J-K-L —

Jet aircraft engines, lightest..... Jan. 77
Jet propulsion gas turbine..... Feb. 111
Kinetic energy of a revolving body, nomogram for ..... Jan. 88
Laminates, low-pressure (abstract). Sept. 115
Laminates, low-pressure molded (abstract) ..... May 404
Laminates, post-forming(abstract) Sept. 118
Laminates, strength of glass fiber (abstract) ..... July 117
Latching devices for doors, covers, and lids, manual and automatic pt. I, Aug. 106
pt. II, Sept. 106
Lathe beds, welded tubular (abstract) ..... June 478
Lathe, Bullard vertical turret..... Mar. 192
Lathe has individual motor-driven tool slides, production ..... Apr. 279
Lead electrodes (abstract)..... July 121
Leakage in capillary seals of hydraulic valves and pumps ..... Apr. 290
Lightweight electrical systems, design problems and solutions ..... Aug. 122
Limit switches, their selection and characteristics ..... Sept. 132
Limit switches, selecting ..... Oct. 123
Limit switching mechanisms—methods of mechanical actuation ..... May 392
Loading capacity of porous bearings (abstract) ..... Jan. 52
Lockwasher breakage resulting from hydrogen embrittlement ..... July 150
Locomotive lubricator uses magnesium castings ..... July 104
Low power drives, three adjustable-speed systems for ..... July 90
Low temperature test chamber unit. June 455
Lubricant and fuel pumps, analysis of pressure losses in ..... Nov. 126
Lubricating systems for bearings and machine parts, felt wick ..... June 509

— M —

Machine design textbooks should contain what name implies ..... July 124
Magnesium alloys (abstract) ..... Feb. 131
Magnesium castings for high properties and soundness ..... Apr. 340
Magnesium castings for lightweight portable chain saw..... June 452
Magnesium castings used in locomotive lubricator ..... July 104
Magnesium house trailer, aluminum and ..... Mar. 196
Manganese steel welded dipper..... Dec. 101
Magnetic wire recorder tensioning mechanism ..... May 372
Magnetron, cavity ..... Dec. 142
Magnets, permanent of ductile material ..... Jan. 44
Mandrel winding, constant tension control systems for surface and..... Dec. 117
Manual and automatic latching devices for doors, covers and lids..pt. I, Aug. 106
pt. II, Sept. 106
Materials and manufacturing processes determine economical tolerances. May 374
Materials for precision parts (abstract) ..... Aug. 116
Measurement of small running torques with a driving-type dynamometer ..... Feb. 120
Measuring surface roughness (abstract) ..... Aug. 117
Mechanical design, simplified variable-voltage drive is key to improved ..... Aug. 127
Mechanical devices for automatically governing speed ..... Apr. 288
Meeting the shortage of engineers.. Dec. 79
Melamine glass-cloth laminates.... Feb. 142
Melamine molding compounds ..... Apr. 309
Metal coatings, nickel zinc and nickel tin corrosion resistant ..... Sept. 127
Metal spinning, design of parts to be formed by ..... Aug. 150
Methods of actuating brakes—electric, magnetic and vacuum ..... Jan. 48
Methods of actuating brakes—pneumatic and hydraulic ..... Feb. 132
Milling machine has interlocked hydraulic electric control ..... Jan. 18
Mind to work is the root of progress ..... Mar. 199
comments ..... May 422
Molded and machined nylon..... Dec. 103
Molding of rubber, extrusion principle applied to injection ..... Oct. 96
Motor output depends on total active material, induction ..... Dec. 114
Motor ratings in terms of breakdown torque, fractional horsepower.. Nov. 103
Motor speed adjustment by electronic control ..... May 353
Motor standards benefit industry .. Oct. 79
Motor ventilation requirements for aircraft service ..... May 377
Motors for compact design of portable tools, 360 cycle ..... Nov. 110
Motor speed regulation, d.c. (abstract) ..... Dec. 140
Motors, sub-fractional horsepower.. Mar. 250
Motors, standard small motors can fit most design needs..... pt. I, Apr. 313
pt. II, May 423
Motors, Westinghouse redesigns small Nov. 149
Multiple spindle bar machine eliminates interchangeable cams ..... Aug. 100
Multi-purpose projector ..... Nov. 100

— N —

Nailing machine, egg crate ..... Feb. 113
Nailing machine, precision ..... Oct. 146
Narow sleeve bearings (abstract). Aug. 113
Nash 600 design changes ..... Jan. 12
Need for engineers (abstract)..... May 405
Neoprene in product design..... Jan. 61
New approach in designing high-capacity aircraft brakes..... Nov. 140
New approach in evaluating surface roughness of gear teeth..... Sept. 110

New materials and techniques broaden plastics applications..... Apr. 297
Allyl resins..... Apr. 299
Modified styrenes..... Apr. 301
Cellulose propionate ..... Apr. 302
Silicone materials..... Apr. 304
Plastic coated metal tubing.... Apr. 307
Melamine molding compounds.. Apr. 309
Polyethylene ..... Apr. 311
Nylon ..... Apr. 312

Nickel alloy irons, some high.....Feb. 92
Nickel zinc and nickel tin corrosion resistant metal coatings.....Sept. 127
Nomogram for kinetic energy of a revolving body.....Jan. 88
Nomogram for shaft design.....Jan. 87
Nomograms of chords of holes in bolt circles .....June 523
Nomographic representation of polynomals (abstract) .....May 402
Nonferrous alloy materials for mechanical springs .....Dec. 85
Numerical integrator and computer, electronic .....May 412
Nuts, self-locking .....Feb. 97
Nylon .....Apr. 312
Nylon, molded and machined.....Dec. 103

— O —

Oil pumping unit, compact fuel...Feb. 110
One control knob operates window power ventilator .....Aug. 94
O-ring packings, flexible fluid coupling uses .....Jan. 19
Oscillating motion with self-synchronized impulse, torsional.....Aug. 110
Output of induction motor depends on total active material.....Dec. 114
Overclutch hook speeds track drill release .....Dec. 93

— P —

Packings, flexible fluid coupling uses O-ring .....Jan. 19
Patent council formed.....Mar. 224
Patent law case histories No. 1 May 400 No. 2 June 470, Nos. 3-4 Aug. 129 No. 5 Oct. 152, No. 6 Nov. 104
Patent legislation .....June 497
Patent protection for American industry, foreign .....July 148
Patent system, plight of our.....Feb. 156
Patent system, U. S.—present status and proposed reforms.....Apr. 265
Patents—are they being suppressed (abstract) .....Feb. 127
comment .....May 422
comment .....June 502
comment .....July 141
comment .....Sept. 148
comment .....Oct. 141
Pepper mill uses zinc-alloy die castings .....Apr. 281
Permanent magnets, ductile.....Jan. 44
Photoelastic stress patterns evaluate stress concentration .....Dec. 134
Physical properties of corrugated low-density structures .....May 394
Piezoelectric equations (abstract)..July 120
Pigment dispersion in synthetic rubber latex (abstract) .....Apr. 323
Plain and laminated felt seals—their design and application.....Mar. 209
Planning and scheduling system for development projects.....Nov. 144
Plaster mock-ups reduce engineering problems in bus body design..June 437
Plastic, acid-resistant, heat-stable..May 418
Plastic coated metal tubing.....Apr. 307
Plastic cocoon for equipment storage .....Nov. 152
Plastic film, dielectric.....June 508
Plastic for high frequency precision parts .....Dec. 147
Plastic lawn mower roller.....Dec. 100
Plastic materials supply for 1946 to be greatly expanded.....Feb. 149
Plastic parts, inserts for molded....Jan. 29
Plastic parts, S.P.I. standard for tolerances on molded.....Feb. 172
Plastic plug renews oil well production .....Aug. 149
Plastic pocket compass.....Feb. 114
Plastic protective coating.....Nov. 158
Plastic resins as protective coatings Jan. 1
Plastics applications (special section) .....Apr. 297
Allyl resins.....Apr. 299
Modified styrenes.....Apr. 301
Cellulose propionate.....Apr. 302
Silicone materials.....Apr. 304
Plastic coated metal tubing....Apr. 307
Melamine molding compounds..Apr. 309
Polyethylene .....Apr. 311
Nylon .....Apr. 312
Plastics, design tolerances for transparent acrylic .....July 110
Plastics exposition, first .....June 501
Plastirs for dielectric applications (abstracts) .....July 120
Plastics, friction welding (abstract).May 405
Plastics industry, 1939-1945, German Mar. 218
Plastics manufacturers sponsor research program .....May 419
Plastics parts design, how transfer molding affects.....Nov. 129
Plastics, stability of phenolic (abstract) Apr. 320
Plate spring design (abstract).....Oct. 114
Plates in tension joints under repeated loading .....Dec. 108
Plight of our patent system.....Feb. 156
Plow has two bases, deep-tilling....July 103
Pneumatic sawing and filing tool..Apr. 286
Polyethylene .....Apr. 311
Polysulfide synthetic rubbers.....Jan. 65
Poor recognition breeds frustration Apr. 287
comment .....July 141
comment .....Oct. 141
comment .....Dec. 152
Post-forming laminates (abstract) Sept. 118
Powdered metal cold formed into bearings .....Oct. 98
Powdered metals hot pressed .....Nov. 93
Powerful high frequency tube revealed Feb. 149
Practical considerations that affect gear durability in speed reducers....May 358
Precision-cast parts of high-temperature alloys .....Sept. 121
Precision casting comes of age.....June 495
Preset speed, constant speed regulation—four systems for maintaining Oct. 100
Pressure vessel research begun.....Mar. 223
Printing and wrapping machinery (abstract) .....Dec. 140
Product design briefs..Nov. 100, Dec. 100
Product design for customer acceptance (abstract) .....Nov. 137
Production lathe has individual motor-driven tool slides.....Apr. 279
Projector has electrical timing device, continuous slide film.....Sept. 98
Projector, 16 mm. sound movie....Apr. 282
Projector, multi-purpose.....Nov. 100
Properties and limitations for stepped and tapered extrusions.....June 487
Pump, electric fuel.....Nov. 99
Pump, high pressure variable volume radial type.....May 370
Pump, radial hydraulic.....Jan. 21
Pumps, displacement correction factors for rotary spur gear.....June 440
Pumps to obtain maximum efficiency, design analysis of rotary.....Feb. 138

— R —

Radar countermeasures—electronic warfare .....Jan. 72
Radar product, electronic marine navigator first commercial .....Jan. 69
Radar used for navigation, coast artillery .....Feb. 150
Radar study of moon .....Mar. 220
Radio, built-in wall type.....Dec. 100
Radio designed to fit pocket.....Jan. 21
Radio direction finder, Huff-Duff high frequency .....Apr. 328
Radio relaying (abstract).....May 404
Railroad inspection car.....Jan. 16
Ram jets .....Aug. 140
Rapid color sorting by electronic inspection .....Oct. 90
Rapid reversing drives (abstract) June 480
Recording machine, professional...Dec. 102
Redesign improves appearance and reduces tray syphon cost.....June 462
Redesign reduces cost and improves automatic variable pitch aircraft propeller .....July 100
Release and control of advance engineering information.....Jan. 54
Remote control devices (abstract) July 117
Requirements and design of automotive braking systems.....May 384
Researrh, first supersonic airplane built for .....Dec. 150
Research foundation, Pacific.....June 499
Research institute, Southern.....Mar. 223
Research institute, Stamford.....Dec. 149
Research laboratory, naval.....June 492
Residual stresses can be beneficial or might cause failure of part....Aug. 81
Resins, allyl.....Apr. 299
Resistance coefficients and flow of liquids in pipe systems.....May 406
Riveted tension joints, efficiency of plates in .....Sept. 88
Rivets, special for shear loading....Mar. 236
Rockets .....July 130
Rotating shafts, coupling, pt. I Nov. 124 pt. II Dec. 112
Rotating shafts, sealing.....Oct. 108
Rubber in engineering design, synthetic-II .....Jan. 59
Neoprene in product design....Jan. 61
Polysulfide synthetic rubbers...Jan. 65
Rubber latex, pigment dispersion in synthetic (abstract).....Apr. 323
Rubber spring design with automotive applications, torsion.....July 112

— S —

Saddle mounting increases roller bearing life.....Decfl 99
Sand cast and permanent-mold cast aluminum alloy parts.....Oct. 81
Sawing and filing tool, pneumatic..Apr. 286
Scale, household .....Dec. 102
Scrap piles cost money.....July 79
Screw driver, torque.....Dec. 100
Screw thread for maximum axial force, selection of.....Mar. 244
Screws in shear and tension, strength of countersunk.....May 380
Screws with ball-bearing nuts, design of groove-form.....June 471
Sealing problems for underwater operation of a vehicle.....June 474
Sealing rotating shafts.....Oct. 108
Seals for preventing oil leakage in high speed superchargers.....Feb. 158
Seals of hydraulic valves and pumps, leakage in capillary.....Apr. 290
Seals, plain and laminated felt....Mar. 209
Selecting limit switches.....Oct. 123
Selecting operating pressures for hydraulic systems.....Feb. 163
Selection machine for engine mounting Feb. 104
Selection of screw thread for maximum axial force.....Mar. 244
Self-healing capacitor (abstract)...Sept. 117
Self locking nuts, testing the effectiveness of.....Feb. 97
Self-propelled combine of welded steel construction .....Apr. 276
Sensitive ball bearing test unit measures small changes in torque.....Oct. 129
Servomechanisms for instrument and power drives.....Apr. 332
Servomechanisms, fundamentals of June 464
Shaft design, nomogram for.....Jan. 87
Shot peening and fatigue strength (abstract) .....Apr. 321
Signal corps trailer chassis has tension bar suspension.....Sept. 142
Significance of impact-test data in design of engineering structures..Sept. 81
Silicone materials.....Apr. 304
Silicones outstanding properties (abstract) .....Jan. 53
Simplified practice reduces waste in industry .....Sept. 138
Simplified variable-voltage drive is key to improved mechanical design Aug. 127
Sintered metals .....Apr. 268
Sintered versus cast metals.....Feb. 122
Slide viewer made from phenolic plastic .....Sept. 97
Soldering iron, trigger feed.....Oct. 99
Solution of simultaneous linear equations, four methods for.....June 513
Special rivets for shear loading..Mar. 236
Specially designed motors solve many industrial drive problems.....Sept. 84
Speed, automatically governing....Apr. 288
Speed regulation, constant.....Oct. 100
Speed reducers, practical considerations that affect gear durability in....May 358
S.P.I. standard for tolerances on molded plastics parts.....Feb. 172
Split connecting rods and bearings reduce compressor size.....Nov. 98
Spot weld strengths and structures of 75ST alclad aluminum alloy....Sept. 102
Spot welded 75ST alclad alloy, effects of corrosion on.....Oct. 126
Spot welding design data.....Nov. 105
Spring design with automotive applications, torsion rubber.....July 112
Spring loaded balls rotate engine valves .....June 457
Springs, carbon and alloy steel materials for cold-formed.....Oct. 119 corrections .....Dec. 152
Springs, carbon and alloy steel materials for hot-formed.....Nov. 86
Springs, nonferrous alloy materials for mechanical .....Dec. 85
Springs, stranded wire helical for machine guns.....July 154
Squirrel cage motors, basic control circuits for.....June 444
Stamping trimmer .....Nov. 94
Standard small motors can fit most design needs.....pt. I Apr. 313 pt. II May 423
Standardization and basic principles of procedure, applied finishes.....Jan. 24
Standardization of temperature and electrical measurements.....Mar. 212
Standards cannot stagnate progress June 463
Standards international unification of engineering .....Apr. 325
comment .....Sept. 148
Stationary gas turbine operates at 1,500 deg. F.....May 415
Steam cleaning unit.....Apr. 284
Steel, hard soldering of (abstract).Aug. 115
Steel forgings, fatigue strength of.Sept. 130
Steels, allowable working stresses..Mar. 205
Steering mechanism .....Apr. 285
Strain gages used to analyze stresses in welded trusses.....Oct. 136
Stranded wire helical springs for machine guns.....July 154
Strength of countersunk screws in shear and tension .....May 380
Strength of glass fiber laminates (abstract) .....July 117
Stress analysis symposium.....Dec. 121
Brittle coating method for experimental stress analysis.....Dec. 122
Truck fan reduced in weight and increased in strength.....Dec. 125
Connecting rod design improved through brittle coating testing.Dec. 128
Impact strength increased by removing materials .....Dec. 131
Photoelastic stress patterns evaluate stress concentration .....Dec. 134
Stress concentration, photoelastic stress patterns evaluate .....Dec. 134
Stresses in disks, sum and difference
Stresses can be beneficial or might cause failure of part, residual..Aug. 81
Stresses in disks, sum and difference method for calculating.....Oct. 147
1947 Studebakers .....July 94
Styrenes, modified.....Apr. 301
Sum and difference method for calculating stresses in disks.....Oct. 147
Supercharger, two stage turbo.....Apr. 330
Superchargers, bearing design and installation in high-speed.....Jan. 8
Superchargers, seals for preventing oil leakage in high-speed.....Feb. 158
Super-finished plane surfaces, comparison of roughness (abstract)...May 401
Supersonic non-destructive testing..Nov. 154
Surface contours in airplane design (abstract) .....Feb. 127

Surface roughness of gear teeth, a new approach in evaluating.....Sept. 110
Synthetic rubber in engineering—II..Jan. 59
Neoprene in product design....Jan. 61
Polysulfide synthetic rubbers....Jan. 65

— T —

Television camera design.....Jan. 15
Television has commercial future, airborne .....May 416
Television-radar air navigation....June 498
Temperature and electrical measurements, standardization of.....Mar. 212
Testing the effectiveness of self-locking nuts .....Feb. 97
Textbooks should contain what name implies, machine design.....July 124
Theory and design of steam-system vent valves .....Oct. 142
Thermoplastic coating for cloth (abstract) .....Oct. 117
Thermosetting adhesives for wood-properties, techniques and applications .....July 84
Three adjustable-speed systems for low power drives.....July 90
Thyratron, the hydrogen (abstract) Apr. 319
Torsion rubber spring design with automotive applications.....July 112
Torsional oscillating motion with self-synchronized impulse.....Aug. 110
Tractor-compressor .....Nov. 102
Trailer chassis has torsion bar suspension .....Sept. 142
Transfer molding affects plastics parts design, how.....Nov. 129
Translating inventions into marketable products .....June 484
Transparent acrylic plastics, design tolerances for.....July 110
Trigger feed soldering iron.....Oct. 99
Truck fan reduced in weight and increased in strength.....Dec. 125
Tube, powerful high frequency....Feb. 149
Tubing for combating corrosion, bimetallic double-wall.....Feb. 102
Tubing, plastic coated metal.....Apr. 307
Twin-engine truck design.....July 102

— U —

Underwater operation of a vehicle, design and sealing problems for..June 474
Unification of engineering standards, international .....Apr. 324
comment .....Sept. 148
Unified engine ignition system.....Aug. 99
U. S. patent system—present status and proposed reforms.....Apr. 265

— V —

Values of business contacts.....Nov. 79
Valve operation, automatic controling mechanisms for.....pt. I June 482
pt. II, July 128
Valves, piping and design data for control of hydraulic systems.....Oct. 86
Variable-voltage drive is key to improved mechanical design.....Aug. 127
Varistors, copper oxide and silicon carbide .....Nov. 121
Velocity and acceleration in cam design .....Mar. 246
Vent valves, theory and design of steam-system .....Oct. 142
Vibration in spring mounted apparatus isolation of .....pt. I July 106
pt. II Aug. 154
Reference book sheets..July 159,161, 163
Voltage variations (abstract).....Mar. 239

— W —

Weatherby, Fred S.....Nov. 148
Welded parts, design of.....July 122
Welded tubular lathe beds (abstract) June 478
Welder, automatic butt.....Dec. 102
Welding codes and specifications..Dec. 81
Weldments for best results at lowest costs .....Aug. 86
Westinghouse redesigns small motors .....Nov. 149
Wheatstone bridge analysis (abstract) Oct. 118
What changes to improve welding codes and specifications?.....Dec. 81
Why Packard made new drawings for the Rolls Royce Merlin engine..Nov. 81
Wilson committee limits commercial standards activities of government .....Apr. 326
Wind tunnel, NACA complete transonic .....Dec. 148
Window power ventilator.....Aug. 94
Worm drives, efficienry of.....Oct. 155, 157
Woven and molded friction materials for disk-type clutches.....Apr. 273

— Z —

Zinc alloy die castings, finishes for May 389
Zinc alloy die castings simplify wallpaper trimmer.....June 458
Zinc alloy die castings used in pepper mill .....Apr. 281

CLASSIFIED INDEX

DESIGN ANALYSIS AND CALCULATIONS

Allowable working stresses for steel Mar. 205
Brakes, new approach in designing high-capacity aircraft.....Nov. 140
Braking systems, requirements and design of automotive.....May 384
Calculations of geometrical dimensions on drawn parts.....Mar. 263
Cam design, velocity and acceleration Mar. 246
Circular calibration ring with two axes of symmetry.....Feb. 115
Design analysis of rotary pumps to obtain maximum efficiency.....Feb. 138
Displacement correction factors for rotary spur gear pumps.....June 440
Durex-100 engine bearings—material characteristics and design data..Apr. 335
Efficiency of plates in riveted tension joints .....Sept. 88
Fatigue strength of steel forgings..Sept. 130
Friction brake classification and analyses of their design.....Mar. 182
Friction brake linings.....Jan. 39
Gear durability in speed reducers, practical considerations that affect..May 358
Graphical method for analyzing hydraulic pump and motor data..Mar. 230
Groove-form screws with ball-bearing nuts .....June 471
High nickel alloy irons.....Feb. 92
Impact stress in elastic bodies calculated by the energy method..Mar. 200
Isolation of vibration in spring mounted apparatus.....pt. I July 106
pt. II Aug. 154
Reference book sheets July 159, 161, 163
Leakage in capillary seals of hydraulic valves and pumps .....Apr. 290
Nomographic representation of polynomials (abstract).....May 402
Plate spring design (abstract)....Oct. 114
Plates in tension joints under repeated loading .....Dec. 108
Residual stresses can be beneficial or might cause failure of part....Aug. 81
Resistance coefficients and flow of liquids in pipe systems.....May 406
Rivets for shear loading.....Mar. 236
Selection of screw thread for maximum axial force.....Mar. 244
Servomechanisms for instrument and power drives.....Apr. 332
Significance of impact-test data in design of engineering structures.Sept. 81
Solution of simultaneous linear equations, four methods for.....June 513
Spot welding design data.....Nov. 105
Spring design with automotive applications, torsion rubber.....July 112
Springs, stranded wire helical for machine guns.....July 154
Strength of countersunk screws in shear and tension.....May 380
Sum and difference method for calculating stresses in disks.....Oct. 147
Testing the effectiveness of self-locking nuts .....Feb. 97
Theory and design of steam-system vent valves .....Oct. 142
Torsional oscillating motion with self-synchronized impulse.....Aug. 110
Welded parts, design of.....July 122

ENGINEERING DEPARTMENT ORGANIZATION

Aircraft materials research.....Feb. 146
Control of engineering projects...Mar. 177
Design production and research (abstract) .....Sept. 119
Drawing changes to assure promptness and accuracy, handling.....Mar. 226
Drawings for machining and casting uses, dual dimensioning of....May 398
Drawings for the Rolls Royce Merlin engine, why Packard made new..Nov. 81
Engineering department management, clerical and semi-technical services in .....Aug. 102
Engineering management fundamentals adapted to the small company..Oct. 110
Engineering standards, international unification of .....Apr. 324
comment .....Sept. 148
Invention for maximum legal protection, how to disclose your.....May 428
comment .....Oct. 141
Inventions into marketable products, translating .....June 484
Need for engineers (abstract).....May 405
Patents—are they being suppressed (abstract) .....Feb. 127
comment .....May 422
comment .....June 502
comment .....July 141
comment .....Sept. 148
comment .....Oct. 141
Patent law case histories No. 1 May 400
No. 2 June 470, Nos. 3-4 Aug. 129
No. 5 Oct. 152, No. 6 Nov. 104
Patent protection for American industry, foreign.....July 148
Patent system, plight of our.....Feb. 156
Patent system, U. S.—present status and proposed reforms.....Apr. 265
Planning and scheduling system for development projects.....Nov. 144
Plaster mock-ups reduce engineering problems in bus body design...June 437
Release and control of advance engineering information.....Jan. 54
Simplified practice reduces waste in industry .....Sept. 138

ELECTRONIC UNITS AND CIRCUITS

Beverage inspertion machine.....May 362
Cavity magnetron.....Dec. 142
Changes in load current record performance .....Dec. 94
Effect of voltage variations (abstract) .....Mar. 239
Electronic marine navigator first commercial radar product.....Jan. 69
Electronic probe controls liquid levels Oct. 93
Electronic warfare: radar countermeasures .....Jan. 72
Huff-Duff high-frequency radio direction finder.....Apr. 328
Hydrogen thyratron (abstract)....Apr. 319
Improved cathode-ray tubes (abstract) Nov. 139
Magnetic wire recorder tensioning mechanism .....May 372
Motor speed adjustment by electronic control .....May 353
Numerical integrator and computer, electronic .....May 412
Powerful high frequency tube revealed .....Feb. 149
Radio relaying (abstract) .....May 404
Rapid color sorting by electronic inspection .....Oct. 90
Servomechanisms—how to select and apply them.....June 464
Servomechanisms for instrument and power drives.....Apr. 332
Television-radar air navigation....June 498

ELECTRIC PARTS MOTORS AND CONTROLS

Adjustable-voltage control—basic principles and circuits.....July 142
Alternating current power for large aircraft .....June 503
Basic control circuits for squirrel cage motors .....June 444
Camera has self-contained light source Feb. 100
Constant speed regulation—four systems for maintaining preset speed Oct. 100
Constant tension control systems for surface and mandrel winding.....Dec. 117
Control transformers (abstract)...July 119
Copper oxide and silicon carbide varistors .....Nov. 121
360 cycle motors for compact design of portable tools .....Nov. 110

D.c. motor speed regulation (abstract) Dec. 140
Diesel engine crankshaft grinder uses two motors to drive crankshaft. June 456
Ductile permanent magnets. Jan. 44
Effect of voltage variations (abstract) Mar. 239
Electric fuel pump. Nov. 99
Fractional horsepower motor ratings in terms of breakdown torque. Nov. 103
How to apply sub-fractional horsepower motors. Mar. 250
Induction motor output depends on total active material. Dec. 114
Instruments often help machines work at peak efficiency. Aug. 118
Lightweight electrical systems. Aug. 122
Limit switches, their selection and characteristics. Sept. 132
Limit switches, selecting. Oct. 123
Melamine glass-cloth laminates—properties and machinability. Feb. 142
Motor speed adjustment by electronic control. May 353
Motor ventilation requirements for aircraft service. May 377
Rapid reversing drives (abstract). June 480
Remote control devices (abstract). July 117
Self-healing capacitor (abstract). Sept. 117
Servomechanisms—how to select and apply them, fundamentals of. June 464
Servomechanisms for instrument and power drives. Apr. 332
Simplified bridge analysis (abstract) Oct. 118
Simplified variable-voltage drive is key to improved mechanical design. Aug. 127
Specially designed motors solve many industrial drive problems. Sept. 84
Standard small motors can fit most design needs. pt. I Apr. 313
pt. II May 423
Three adjustable-speed systems for low power drives. July 90
Westinghouse redesigns small motors Nov. 149

FINISHES AND COATINGS

Applied finishes standardization and basic principles of procedure. Jan. 24
Automobile finish. Sept. 147
Color—basic principles of application Feb. 89
Design and sealing problems for underwater operation of a vehicle. June 474
Electropolishing metals to obtain surface finish. June 449
Finishes for aluminum. Nov. 113
Finishes for zinc alloy die castings. May 389
Insulation varnish applied by rolling armatures through tank. Sept. 96
Lockwasher breakage resulting from hydrogen embrittlement. July 150
Nickel zinc and nickel tin corrosion resistant metal coatings. Sept. 127
Plastic protective coating. Nov. 158
Plastic resins as protective coatings. Jan. 1
Superfinished plane surfaces, comparison of roughness (abstract). May 401
Surface roughness of gear teeth, a new approach in evaluating. Sept. 110

HYDRAULIC AND PNEUMATIC CONTROLS

Air injector threads german spinning machine. Dec. 95
Analysis of pressure losses in lubricant and fuel pumps. Nov. 126
Compound adjustments made to linkage output with movable fulcrums. Sept. 92
Design analysis of rotary pumps to obtain maximum efficiency. Feb. 138
Displacement correction factors for rotary spur gear pumps. June 440
Eccentric position controls full range of pump output. Oct. 94
Flexible fluid coupling uses O-ring packings. Jan. 19
Gage measures material thickness with air pressure. June 454
Graphical method for analyzing hydraulic pump and motor data. Mar. 230
Grinding machine is hydraulically operated. Aug. 96
High-pressure pump of compact design is of variable volume radial type. May 370
Hydraulic accumulator. Jan. 17
Hydraulic automotive steering mechanism. Apr. 285
Hydraulic brake system. Mar. 191
Hydraulic clutch and speed control. Jan. 22
Hydraulic power boost. Nov. 96
Leakage in capillary seals of hydraulic valves and pumps. Apr. 290
Milling machine has interlocked hydraulic electric control. Jan. 18
Radial hydraulic pump. Jan. 21
Resistance coefficients and flow of liquids in pipe systems. May 406
Selecting operating pressures for hydraulic systems. Feb. 163
Servomechanisms—how to select and apply them. June 464
Valves, piping and design data for control of hydraulic systems. Oct. 86

LUBRICATION

Analysis of pressure losses in lubricant and fuel pumps. Nov. 126
Bearing design and installation in high speed superchargers. Jan. 8
Characteristics and uses of greases (abstract). Feb. 130
Felt seals. Mar. 209
Felt wick lubricating systems for bearings and machine parts. June 509
Leakage in capillary seals of hydraulic valves and pumps. Apr. 290
Locomotive lubricator uses magnesium castings, high-pressure. July 104
Sealing rotating shafts. Oct. 108
Seals for preventing oil leakage in high speed superchargers. Feb. 158
Sensitive ball bearing test unit measures small changes in torque Oct. 129

MATERIALS—METAL
Ferrous

A.G.M.A. standard materials—cast iron gear blanks. Dec. 155, 157
Allowable working stresses for steels Mar. 205
Carbon and alloy steel materials for cold-formed springs. Oct. 119
Correction. Dec. 152
Carbon and alloy steel materials for hot-formed springs. Nov. 86
Engineering properties of sintered versus cast metals. Feb. 122
Fatigue strength of steel forgings. Sept. 130
Gear durability in speed reducers, practical considerations that affect. May 358
Hard-facing materials to improve product performance. Feb. 134
Hard soldering of steel (abstract) Aug. 115
High nickel alloy irons. Feb. 92
Significance of impact-test data in design of engineering structures. Sept. 81

MATERIALS—METAL
Nonferrous

Aluminum alloy parts, sand cast and permanent-mold cast. Oct. 81
Aluminum and magnesium house trailer Mar. 196
Aluminum and magnesium in hoisting equipment (abstract). Sept. 116
Aluminum bearings (abstract). Feb. 128
Aluminum 75ST alclad, effects of corrosion on spot welded. Oct. 126
Aluminum 75ST alclad, spot weld strengths and structures of. Sept. 102
Aluminum, finishes for. Nov. 113
Atmospheric attack on copper alloys (abstract). Nov. 134
Automobile designed for light alloy construction. Dec. 88
Bimetallic double-wall tubing for combating corrosion. Feb. 102
Ductile permanent magnets. Jan. 44
Durex-100 engine bearings—material characteristics and design data. Apr. 335
Electric citrus fruit counter design. May 366
Engineering properties of sintered metals. Apr. 268
Engineering properties of sintered versus cast metals. Feb. 122
Hard-facing materials to improve product performance. Feb. 134
High-pressure locomotive lubricator uses magnesium castings. July 104
High temperature alloys, heat and corrosion resistant. Sept. 151, 153, 155, 157
High-temperature alloys, precision-cast parts of. Sept. 121
High-temperature materials (abstract) Dec. 137
Magnesium alloys (abstract). Feb. 131
Magnesium, basic characteristics (abstract). Apr. 319
Magnesium castings for high properties and soundness. Apr. 340
Magnesium castings for lightweight engine-driven chain saw. June 452
Metal spinning, design of parts to be formed by. Aug. 150
Nickel zinc and nickel tin corrosion resistant metal coatings. Sept. 127
Nonferrous allow materials for mechanical springs. Dec. 85
Powdered metal cold formed into bearings. Oct. 98
Powdered metals hot pressed. Nov. 93
Properties and limitations for stepped and tapered extrusions. June 487
Zinc alloy die casting finishes. May 389
Zinc alloy die castings simplify wallpaper trimmer. June 458
Zinc alloy die castings used in pepper mill. Apr. 281

MATERIALS—NON-METAL
Rubber, Glass, Misc.

Ceramic materials in gas turbine (abstract). Nov. 135
Coated glass eliminates icing. Nov. 153
Extrusion principle applied to the injection molding of rubber. Oct. 96
Felt seals. Mar. 209
Felt wick lubricating systems for bearings and machine parts. June 509
Friction materials, woven and molded for disk-type clutches. Apr. 273
Melamine glass-cloth laminates—properties and machinability. Feb. 142
Pigment dispersion in synthetic rubber latex (abstract). Apr. 323
Rubber spring design with automotive applications, torsion. July 112
Synthetic rubber in engineering design—II. Jan. 59
Neoprene in product design. Jan. 61
Polysulfide synthetic rubbers. Jan. 65

MATERIALS—NON-METAL
Plastics

Abrasive sticks in plastic wedges facilitate automatic bore sizing. Sept. 100
Adhesives for wood, thermosetting. July 84
Cellulose propionate. Apr. 302
Electric citrus fruit counter design. May 366
Friction welding of plastics (abstract) May 405
Germicidal lamp has plastic end fitting. June 461
Inserts for molded plastic parts. Jan. 29
Laminates, low-pressure (abstract). Sept. 115
Laminates, post-forming (abstract). Sept. 118
Materials and manufacturing processes determine economical tolerances. May 374
Melamine molding compounds. Apr. 308

New materials and techniques broaden plastics applications (special section). Apr. 297
Allyl resins. Apr. 299
Modified styrenes. Apr. 301
Cellulose propionate. Apr. 302
Silicone materials. Apr. 304
Plastic coated metal tubing. Apr. 307
Melamine molding compounds. Apr. 309
Polyethylene. Apr. 311
Nylon. Apr. 312

Nylon, molded and machined. Dec. 103
Physical properties of corrugated low-density structures. May 394
Plastic coated metal tubing. Apr. 307
Plastic cocoon for equipment storage Nov. 152
Plastic film, dielectric. June 508
Plastic for high frequency precision parts. Dec. 147
Plastic lawn mower roller. Dec. 100
Plastic plug renews oil well production Aug. 149
Plastic pocket compass. Feb. 114
Plastic protective coating. Nov. 158
Polyethylene. Apr. 311
Resins, allyl. Apr. 299
Silicone materials. Apr. 304
Slide viewer made from phenolic plastic. Sept. 97
S.P.I. standard for tolerances on molded plastics parts. Feb. 172
Stability of phenolic plastics (abstract) Apr. 320
Styrenes, modified. Apr. 301
Thermoplastic coatings for cloth (abstract). Oct. 117
Transfer molding plastics parts. Nov. 129
Transparent acrylic plastics, design tolerances for. July 110

Unified engine ignition system. Aug. 99

MECHANICAL MOVEMENTS AND MECHANISMS

Automatic controlling mechanisms for valve operation. pt. I June 482
pt. II July 128
Brake classifications and analyses of their design, friction. Mar. 182
Brakes, methods of actuating electric, magnetic and vacuum. Jan. 48

Brakes, methods of actuating pneumatic and hydraulic.....Feb. 132
Brakes, new approach in designing high-capacity aircraft .....Nov. 140
Cam design, velocity and acceleration Mar. 246
Clamping devices for accurately aligning adjustable parts.....Mar. 216
Coupling rotating shafts.....pt. I Nov. 124
pt. II Dec. 112
Latching devices for doors, covers and lids .....pt. I Aug. 106
pt. II Sept. 106
Limit switches mechanisms.....May 392
Mechanical devices for automatically governing speed .....Apr. 288
Servomechanisms, how to select and apply them .....June 464
Servomechanisms for instrument and power drives .....Apr. 332

MECHANICAL PARTS AND DRIVES

Adaptable machine tools (abstract) Mar. 241
Automatic controlling mechanisms for valve operation .....pt. I June 482
pt. II July 128
Bearing design, charts for fluid friction .....pt. I Apr. 351
pt. II May 435
Bearing design and installation in high-speed superchargers .....Jan. 8
Bearings, aluminum (abstract)....Feb. 128
Bearings, Durex-100 engine.....Apr. 335
Bearings, loading capacity of porous (abstract) .....Jan. 52
Bearings, narrow sleeve (abstract).Aug. 113
Brake classifications, friction.....Mar. 182
Brakes, high-capacity aircraft....Nov. 140
Brake linings (abstract).....Jan. 50
Brake linings, friction.....Jan. 39
Braking systems, automotive.....May 384
Camera has self-contained light source Feb. 100
Clutches, woven and molded friction materials for disk-type.....Apr. 273
Felt seals—their design and application .....Mar. 209
First two-stage turbo supercharger Apr. 330
Gas turbine operates at 1,500 deg. F., stationary .....May 415
Gears, fine pitch IV.....Aug. 130
correction .....Oct. 141
Gears, testing the tooth durability of (abstract) .....Dec. 142
Groove-form screws with ball-bearing nuts .....June 471
Rivets for shear loading, special...Mar. 236
Sealing rotating shafts.....Oct. 108
Seals for preventing oil leakage in high speed superchargers .....Feb. 158
Selection machine for engine mounting Feb. 104
Self-locking nuts .....Feb. 97
Speed reducers, practical considerations that affect gear durability in...May 358
Spring design with automotive applications, torsion rubber.....July 112
Springs, carbon and allow steel materials for cold-formed .....Oct. 119
corrections .....Dec. 152
Springs, carbon and alloy steel materials for hot-formed .....Nov. 86
Springs for machine guns, stranded wire helical .....July 154
Springs, nonferrous alloy materials for mechanical .....Dec. 85
Strength of countersunk screws in shear and tension .....May 380
Vent valves, theory and design of steam-system .....Oct. 142
Worm drives, chart for efficiencies of Oct. 155

PRODUCTION PROCESSES

Brazed parts, copper furnace.....Oct. 103
Crosley car .....Mar. 188
Engineering properties of sintered metals .....Apr. 268
Engineering properties of sintered versus cast metals.....Feb. 122
Extrusions, properties and limitations for stepped and tapered.....June 487
German die castings made by hot shot gooseneck method .....July 81
Laminates, low pressure (abstract) Sept. 115
Low pressure molding (abstract)...Nov. 138
Magnesium castings for high properties and soundness.....Apr. 340
Materials and manufacturing processes determine economical tolerances May 374
Metal spinning .....Aug. 150
Precision-cast parts of high-temperature alloys .....Sept. 121
Precision casting comes of age....June 495
Properties and machinability of glass-cloth laminates .....Feb. 142
Sand cast and permanent-mold cast aluminum alloy parts.....Oct. 81
Shot peening and fatigue strength (abstract) .....Apr. 321
Spot welding design data.....Nov. 105
Spot weld strength and structures of 75ST alclad aluminum alloy..Sept. 102
Spot welded 75ST alclad alloy, effects of corrosion on .....Oct. 126
Transfer molding affects plastics parts design, how .....Nov. 129
Welded parts, design of.....July 122
Welded tubular lathe beds (abstract) June 478
Welding codes and specifications...Dec. 81
Weldments for best results at lowest costs .....Aug. 86

REFERENCE BOOK SHEETS

A.G.M.A. standard materials—cast iron gear blanks .....Dec. 155, 157
Calculations of geometrical dimensions on drawn parts.....Mar. 263
Chart and formulas for determining the properties of copper wire in the American wire gage.....Aug. 159, 161
correction .....Nov. 158
Chart for efficiencies of worm drives Oct. 155, 157
Charts for fluid friction bearing design .....pt. I Apr. 351
pt. II May 435
Chart for solution of oblique-angle triangles .....Nov. 161
Chart for solution of right triangles.Nov. 163
Heat and corrosion resistant high temperature alloys .....Sept. 151
Nomogram for kinetic energy of a revolving body .....Jan. 88
Nomogram for shaft design.....Jan. 87
Nomograms of chords of holes in bolt circles .....June 523
S.P.I. standard for tolerances on molded plastics parts .....Feb. 172
Vibration frequency ratios of bottom mounted apparatus .....July 159
161, 163

RESEARCH AND TEST METHODS

Aircraft materials research.....Feb. 146
Analysis of pressure losses in lubricant and fuel pumps.....Nov. 126
Brittle coating method for experimental stress analysis .....Dec. 125
Connecting rod design improved through brittle coating testing.....Dec. 128
Driving-type dynamometer.....Feb. 120
Engineering educators include research functions .....Sept. 145
Engineering standards, international unification of .....Apr. 324
comment .....Sept. 148
Friction materials, woven and molded for disk-type clutches.....Apr. 273
Gas turbine operates at 1,500 deg. F., stationary .....May 415
Graphical method for analyzing hydraulic pump and motor data....Mar. 230
Impact strength increased by removing material .....Dec. 131
Lockwasher breakage resulting from hydrogen embrittlement .....July 150
Naval research laboratory.....June 492
Numerical integrator and computer, electronic .....May 412
Pacific research foundation.....June 499
Photoelectric stress patterns evaluate stress concentration ... .Dec. 134
Plastics manufacturers sponsor research program .....May 419
Pressure vessel research begun....Mar. 223
Rockets .....July 130
Sensitive ball bearing test unit measures small changes in torque.....Oct. 129
Shot peening and fatigue strength (abstract) .....Apr. 321
Southern research institute.....Mar. 223
Springs, stranded wire helical for machine guns .....July 154
Strength of countersunk screws in shear and tension .....May 380

Stress analysis symposium .....Dec. 121
Brittle coating method for experimental stress analysis.....Dec. 122
Truck fan reduced in weight and increased in strength.....Dec. 125
Connecting rod design improved through brittle coating testing .....Dec. 128
Impact strength increased by removing material .....Dec. 131
Photoelastic stress patterns evaluate stress concentration .....Dec. 134

Supersonic airplane built for research, first .....Dec. 150
Supersonic non-destructive testing.Nov. 154
Testing the effectiveness of self-locking nuts .....Feb. 97
Testing the tooth durability of gears (abstract) .....Dec. 138
Truck fan reduced in weight and increased in strength.....Dec. 122

STANDARDS AND STANDARDIZATION

A.G.M.A. standard materials—cast iron gear blanks .....Dec. 155, 157
Aircraft materials research.....Feb. 146
Applied finishes standardization and basic principles of procedure..Jan. 24
Drawings for machining and casting uses, dual dimensioning of.....May 398
Engineering standards, international unification of .....Apr. 324
comment .....Sept. 148
Gears, fine pitch—inspection and tolerances IV .....Aug. 130
comment .....Oct. 141
International standards organizations hold Paris meetings.....Aug. 144
New approach in evaluating surface roughness of gear teeth.....Sept. 110
Standardization of temperature and electrical measurements .....Mar. 212
Standards activities of government, Wilson committee limits commercial Apr. 326
Why Packard made new drawings for Rolls Royce Merlin engine....Nov. 81

AUTHORS' INDEX

ADAMS, Harold—Strength of countersunk screws in shear and tension .....May 380
ALMEN, J. O.—Residual stresses can be beneficial or might cause failure of part.....Aug. 81
ANDERSON, Russell G.—Brittle coating method for experimental stress analysis .....Dec. 122
ARATA, W. H.—Stepped and tapered extrusions .....June 487
ASHKINAZY, S. B...Applied finishes standardization and basic principles of procedure.....Jan. 24

BARNARD, S. Bertrand—Translating inventions into marketable products .....June 484
BEAN, W. T., Jr.—Connecting rod design improved through brittle coating testing .....Dec. 128
BLACKMORE, Paul O.—Plastic resins as protective coatings.....Jan. 1
BRELSFORD, H. A.—Measurement of small running torques with a driving-type dynamometer.....Feb. 120
BREWER, Given—Circular calibration ring with two axes of symmetry .....Feb. 115

CALDWELL, G. A.—Simplified variable-voltage drive is key to improved mechanical design .....Aug. 127
CAPE, A. T.—Hard-facing materials to improve product performance..Feb. 134
CLARK, H. H.—Stranded wire helical springs for machine guns.....July 154
COLE, G. N.—Dual dimensioning of drawings for machining and casting uses .....May 398
COLLINS, Haskell R.—Planning and scheduling systems for development projects .....Nov. 144
CONRADI, L. C.—Nickel zinc and nickel tin corrosion resistant metal coatings .....Sept. 127
COSLER, V. A.—Neoprene in product design .....Jan. 61
COZZONE, F. P.—Efficiency of plates in rivet tension joints.....Sept. 88

DEVER, Frederick S.—Spot welding design data .....Nov. 105
DODGE, Louis—Nomograms of chords of holes in bolt circles.....June 523

EIWEN, Charles—Design of welded parts .....July 122
ELBERTY, R. S.—Three adjustable-speed systems for low power drives .....July 90

ERICHSON, W. B.—Displacement correction factors for rotary spur gear pumps ..... June 440
EXLINE, Paul G.—Leakage in capillary seals of hydraulic valves and pumps ..... Apr. 290
FAGEOL, W. B., Jr.—Torsion rubber spring design with automotive applications ..... July 112
FAUST, Charles L.—Electropolishing metals to obtain surface finish ..... June 449
FIELD, Howard, Jr.—Selecting operating pressures for hydraulic systems ..... Feb. 163
FLEISCHMANN, Walter L.—Lock-washer breakage resulting from hydrogen embrittlement ..... July 150
FOSTER, H. W.—Plates in tension joints under repeated loading ... Dec. 108
FOX, Zola—Bearing design and installation in high-speed superchargers ..... Jan. 8
Seals for preventing oil leakage in high-speed superchargers .... Feb. 158
Machine design textbooks should contain what name implies .. July 124
FULLER, Prescott C.—Melamine glass-cloth laminates ..... Feb. 142
Thermosetting adhesives for wood—properties, techniques and applications ..... July 84

GALSTON, Clarence G.—The plight of our patent system ..... Feb. 156
GISSER, H.—Sensitive ball bearing test unit measures small changes in torque ..... Oct. 129
GODDESS, Eugene—Standardization of temperature and electrical measurements ..... Mar. 212
GOSS, J. H.—Ductile permanent magnets offer new design possibilities ..... Jan. 44

HAMM, H. W.—Charts for fluid friction bearing design
p. I Apr. 351, pt. II May 435
HAPPEL, W. E.—Simplified variable-voltage drive is key to improved mechanical design ..... Aug. 127
HARRISON, Marvin G.—Four methods for the solution of simultaneous linear equations ..... June 513
HERWALD, S. W.—Fundamentals of servomechanisms—how to select and apply them ..... June 464
HILLER, Robert L.—Thermosetting adhesives for wood—properties, techniques and applications ..... July 84
HOLINGER, C. J.—Design of parts to be formed by metal spinning ... Aug. 150
HOLLIDAY, T. B.—Control of engineering projects ..... Mar. 177
Alternating current power for large aircraft ..... June 503
Lightweight electrical systems—design problems and solutions .. Aug. 122

IVERSEN, E. J.—Copper oxide and silicon carbide varistors ..... Nov. 121

JEHLE, Ferdinand—Theory and design of steam-system vent valves ... Oct. 142
JOHNSON, E. L.—Felt wick lubricating systems for bearings and machine parts ..... June 509
JONES, J. E.—Constant speed regulation-four systems for maintaining preset speed ..... Oct. 100
Constant tension control systems for surface and mandrel winding ... Dec. 117

KAHR, John S.—Velocity and acceleration in cam design ..... Mar. 246
KAO, Johnson H. K.—Chart for efficiencies of worm drives ..... Oct. 155, 157
KARR, J. H.—360 cycle motors for compact design of portable tools .... Nov. 110
KASPER, Louis—Clamping devices for accurately aligning adjustable parts ..... Mar. 216
Chart for solution of oblique-angle triangles ..... Nov. 161
Chart for solution of right triangles ..... Nov. 163
KEYSOR, H. C.—Carbon and alloy steel materials for hot-formed springs ..... Nov. 86
KIDD, C. S.—Limit switches, their selection and characteristics .... Sept. 132
Selecting limit switches ..... Oct. 123
KLAYER, Walter J.—Sand cast and permanent-mold cast aluminum alloy parts ..... Oct. 81
KLEIN, A. L.—Materials and manufacturing processes determine economical tolerances ..... May 374
KROTZ, A. S.—Torsion rubber spring design with automotive applications ..... July 112
LAND, M. L.—Sum and difference method for calculating stresses in disks .. Oct. 147
LASSEN, E. U.—Adjustable-voltage control—basic principles and circuits ..... July 142
LEHMBERG, Wm. H.—Plain and laminated felt seals ..... Mar. 209
Felt wick lubricating systems for bearings and machine parts ... June 509
LIGNIAN, J. A.—Durex-100 engine bearings — material characteristics and design data ..... Apr. 335
LIPSON, Charles—Allowable working stresses for steels ..... Mar. 205
Fatigue strength of steel forgings ..... Sept. 130
Truck fan reduced in weight and increased in strength ..... Dec. 125
LITTLEJOHN, Harry—Basic control circuits for squirrel cage motors ..... June 444

MACDUFF, J. N.—Isolation of vibration in spring mounted apparatus pt. I July 106, pt. II Aug. 154
Reference book sheets. July 159, 161, 163
MALEEV, Vladimir L.—Design of groove-form screws with ball-bearing nuts ..... June 471
MARTIN, Louis D.—A new approach in evaluating surface roughness of gear teeth ..... Sept. 110
MARTIN, S. M., Jr.—Polysulfide synthetic rubbers ..... Jan. 65
McDOWALL, C. J.—Design of magnesium castings for high properties and soundness ..... Apr. 340
MILLER, John H.—Instruments often help machines work at peak efficiency ..... Aug. 118
MILLS, Kenneth N.—Practical considerations that affect gear durability in speed reducers ..... May 358
MODES, E. E.—Selection of screw thread for maximum axial force ..... Mar. 244
MOODY, A. M. G.—Sum and difference method for calculating stresses in disks ..... Oct. 147
MURRAY, Wm. M.—Photoelastic stress patterns evaluate stress concentration ..... Dec. 134

NACHOD, Carl P.—Nomogram for shaft design ..... Jan. 87
Nomogram for kinetic energy of a revolving body ..... Jan. 88
Formulas for determining the properties of copper wire in the American wire gage ..... Aug. 159
correction ..... Nov. 158
Chart for determining the properties of copper wire in the American wire gage ..... Aug. 161
NICHINSON, David B.—Torsional oscillating motion with self-synchronized impulse ..... Aug. 110
NOLL, G.—Allowable working stresses for steels ..... Mar. 205
Fatigue strength of steel forgings ..... Sept. 130
NUTT, Harold—Woven and molded friction materials for disk-type clutches ..... Apr. 273

OCHIEANO, Mario L.—Spot weld strengths and structures of 75ST alclad aluminum alloy ..... Sept. 102
Effects of corrosion on spot welded 75ST alclad alloy ..... Oct. 126
O'CONNOR, Fergus—Color—basic principles of application ..... Feb. 89
OEHLER, I. A.—Design of weldments for best results at lowest costs. Aug. 86
OOMS, Casper W.—The United States patent system—present status and proposed reforms ..... Apr. 265

PERKINS, G. S.—Servomechanisms for instrument and power drives ... Apr. 332
PETTIT, R. E.—Finishes for aluminum ..... Nov. 113

RIEBER, Wm. K.—How to disclose your invention for maximum legal protection ..... May 428
comment ..... Oct. 141
ROBB, Wayne F.—How transfer molding affects plastics parts design ..... Nov. 129
ROBINSON, R. C.—Specially designed motors solve many industrial drive problems ..... Sept. 84

SAUER, J. A.—Testing the effectiveness of self-locking nuts ..... Feb. 97
SCANLAN, Robert H.—Four mehtods for the solution of simultaneous linear equations ..... June 513
SCHMIDT, Kenneth—Special rivets for shear loading ..... Mar. 236
Copper furnace brazed parts and principles of design ..... Oct. 103
SCHWARZKOPF, Paul — Engineering properties of sintered versus cast metals ..... Feb. 122
Engineering properties of sintered metals ..... Apr. 268
SCOGLAND, C. A.—Physical properties of corrugated low-density structures ..... May 394
SEFING, F. G.—Some high nickel alloy irons ..... Feb. 92
SHINN, Byron H.—A new approach in designing high-capacity aircraft brakes ..... Nov. 140
SIROKY, Edmond—Requirements and design of automotive braking systems ..... May 384
SKROBISCH, Alfred—How to apply sub-fractional horsepower motors ..... Mar. 250
SMITH, Clifford—Plaster mock-ups reduce engineering problems in bus body design ..... June 437
SNEAD, J. L.—Sensitive ball bearing test unit measures small changes in torque ..... Oct. 129
SPOTTS, Merhyle F.—Impact stress in elastic bodies calculated by the energy method ..... Mar. 200
STONE, D. D.—Design and sealing problems for underwater operation of a vehicle ..... June 474
STOTT, LOUIS L.—Molded and machined nylon ..... Dec. 103
SWEENY, W. O.—Precision-cast parts of high-temperature alloys .... Sept. 121

TATARINOV, Victor—Resistance coefficients and flow of liquids in pipe systems ..... May 406
TEICHMANN, O. E.—Graphical method for analyzing hydraulic pump and motor data ..... Mar. 230
THOMPSON, James E.—Release and control of advance engineering information ..... Jan. 54
Handling drawing changes to assure promptness and accuracy ..... Mar. 226
Clerical and semi-technical services in engineering department management ..... Aug. 102
Engineering management fundamentals adapted to the small company ..... Oct. 110
TOULMIN, H. A., Jr.—Foreign patent protection for American industry ..... July 148
Case histories in patent Law No. 1 May 400, No. 2 June 470, Nos. 3-4 Aug. 129, No. 5 Oct. 152, No. 6 Nov. 104
TOWNSEND, J. R.—German die castings made by hot shot gooseneck method ..... July 81
TRICKEY, P. H.—Output of induction motor depends on total active material ..... Dec. 114

VEINOTT, Cyril G.—Standard small motors can fit most design needs pt. I Apr. 313, pt. II May 423

WALSH, B. R.—Analysis of pressure losses in lubricant and fuel pumps ..... Nov. 126
WELTZIEN, V. M.—Valves, piping and design data for control of hydraulic systems ..... Oct. 86
WIGHTMAN, L. W.—Motor ventilation requirements for aircraft service ..... May 377
WILSON, Warren E.—Design analysis of rotary pumps to obtain maximum efficiency ..... Feb. 138
WINDENBURG, D. F.—Significance of impact-test data in design of engineering structures ..... Sept. 81
WOLF, Richard J.—Design of welded parts ..... July 122
WOLFF, S. S.—Motor speed adjustment by electronic control ..... May 353

ZIMMERLI, F. P.—Carbon and alloy steel materials for cold-formed springs ..... Oct. 119
corrections ..... Dec. 152
Nonferrous alloy materials for mechanical springs ..... Dec. 85

Subscribers can procure extra copies of the 1946 Index by directing requests to The Editor, PRODUCT ENGINEERING, 330 W. 42nd St., New York 18, N. Y.

ive-
Feb. 97
for
ear
une 513
for
Mar. 236
and
Oct. 103
ing
ast
Feb. 122
red
Apr. 268
er-
uc-
May 394
al-
Feb. 92
in
raft
Nov. 140
and
ys-
May 384
ply
tors
Mar. 250
re-
bus
une 437
ing
ges
Oct. 129
in
the
Mar. 200
ing
tion
une 474
ned
Dec. 103
rts
ept. 121

co-
ipe
May 406
nod
and
Mar. 230
and
ing
an. 54
as-
acy
Mar. 226
ces
an-
ug. 102
da-
all
Oct. 110
ent
try
uly 148
. 1
3-4
Nov. 104
ast-
eck
uly 81
ion
na-
Dec. 114

all
eds
May 423

ure
nps
Nov. 126
and
ulic
Oct. 86
ion
vice
May 377
sis
um
Feb. 138
of
gi-
ept. 81
led
uly 122
ent
May 353

loy
ned
Oct. 119
Dec. 152
for
Dec. 85